

CLAIMS**What is claimed is:**

1. A navigation system comprising:
an input device connected with a navigation server, where the input device is
5 configured to allow a user to enter a trip destination;
a route calculation module operable to calculate a first route to the destination;
a display for displaying the first route on a road network map that includes a plurality
map elements; and
an adaptive route calculation module operable to receive a user modification of the
10 first route from the input device, where the user modification includes selecting at least one
map element in the road network map, where a second route is calculated with the adaptive
route calculation module as a function of the user modification; and where the second route is
transmitted to a vehicle navigation system.
- 15 2. The navigation system of claim 1 where selected map elements are avoided in the
second route.
3. The navigation system of claim 1 where selected map elements are included in the
second route.
- 20 4. The navigation system of claim 1 where the user modification is based on at least one
vehicle characteristic.
5. The navigation system of claim 4 where the vehicle characteristic may be selected
25 from a group of vehicle characteristics including a vehicle type, a cargo type, a vehicle size, a
cargo size, a vehicle height, a cargo height, and a vehicle weight.
6. The navigation system of claim 1 where the second route is transmitted to the vehicle
navigation system from the navigation server using a wireless communication system.

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7. A method of adaptively generating routes in navigation systems comprising:
generating a road network map with a navigation server, where the road network map
includes a plurality map elements;
allowing a user to select a respective map element in the road network map;
5 calculating a route to a destination as a function of the selection of the respective map
element in the road network map; and
transmitting the route to a vehicle navigation system located in a vehicle.
8. The method of claim 7 where selected map elements are avoided in the second route.
- 10 9. The method of claim 7 where selected map elements are included in the second route.
10. The method of claim 7 further comprising allowing a user to select a respective map
element using the vehicle navigation system.
- 15 11. The method of claim 10 further comprising calculating a second route to the
destination with an adaptive route calculation module as a function of the selection of the
map element using the vehicle navigation system.
- 20 12. The method of claim 7 further comprising inputting a vehicle characteristic with the
navigation server, where the route to the destination is calculated as a function of the vehicle
characteristic.
- 25 13. The navigation system of claim 12 where the vehicle characteristic may be selected
from a group of vehicle characteristics including a vehicle type, a cargo type, a vehicle size, a
cargo size, a vehicle height, a cargo height, and a vehicle weight.

14. A navigation system comprising:

a navigation server connected with an input device;

a user interface module executable by the navigation server to allow a user to enter a destination with the input device;

5 a route calculation module executable by the navigation server to calculate a first route to the destination that is generated on a road network map that includes a plurality of map elements;

an adaptive route calculation module executable by the navigation server to allow the user to enter a user modification of the first route with the input device, where the user
10 modification includes selection of at least one map element in the road network map, where a second route to the destination is calculated with the adaptive route calculation module as a function of the user modification; and

a wireless communication system connected with the navigation server and a vehicle navigation system, where the second route is transmitted to the vehicle navigation system
15 using the wireless communication system.

15. The navigation system of claim 14 where selected map elements are included in the second route.

20 16. The navigation system of claim 14 where selected map elements are avoided by the second route.

17. The navigation system of claim 14 further comprising a second adaptive route calculation module executable by the vehicle navigation system to allow a user to modify the
25 second route.

18. The navigation system of claim 14 where the user modification includes a second modification based on a vehicle characteristic.

30 19. The navigation system of claim 18 where the vehicle characteristic may be selected from a group of vehicle characteristics including a vehicle type, a cargo type, a vehicle size, a cargo size, a vehicle height, a cargo height, and a vehicle weight.

20. A method of determining routes in a navigation system comprising:
receiving a first input identifying a trip destination with a navigation server;
calculating a first route to the trip destination using a road network map;
5 displaying the first route on a display connected with the navigation server;
receiving a second input selecting at least one location on the road network map to be
one of avoided and included in a second route;
calculating the second route as a function of the selection of the at least one location
on the road network map; and
10 transmitting the second route to a vehicle navigation system.
21. The method of claim 20 where the selection of the at least one location comprises a
node of the road network map.
- 15 22. The method of claim 20 where the selection of the at least one location comprises a
road segment of the road network map.
23. The method of claim 20 further comprising displaying the second route on a display
of the vehicle navigation system.
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24. The method of claim 23 further comprising allowing a user to select a location of the
road network map to be avoided or included in a third route with the display of the vehicle
navigation system.
- 25 25. The method of claim 24 further comprising calculating the third route as a function of
the selected location of the road network map that was entered with the display.
26. The method of claim 20 where transmitting comprises transmitting the second route
with a wireless communication system to the vehicle navigation system.

27. A navigation system comprising:

a first signal including a trip destination that is transmittable to a navigation server from an input device, where a route calculation module is executable by the navigation server to generate a first route to the trip destination;

5 a second signal transmittable from the navigation server to a display, where the display is operable to generate a graphical representation of the first route, where the first route is generated on a road network map that includes a plurality of nodes and a plurality of segments, where an adaptive routing module executable by the navigation server allows a user to enter a user modification of the first route with the input device, where the user
10 modification includes selection of at least map element, where a second route to the destination is calculatable with the adaptive routing module as a function of the user modification; and

a third signal transmittable from the navigation server to a vehicle navigation system, the vehicle navigation system operable to generate a second graphical representation of the
15 second route on a display of the vehicle navigation system as a function of the third signal.

28. The navigation system of claim 27 where the selection of a respective map element avoids the selected map element in the second route.

20 29. The navigation system of claim 27 where the selection of a respective map element includes the selected map element in the second route.

30. The navigation system of claim 27 where the input device and the display comprise a touch-screen display.

25 31. The navigation system of claim 27, where the third signal is transmittable to the vehicle navigation system with a wireless communication system.

32. A navigation system, comprising:

means for calculating a first route to a trip destination with a navigation server, where the first route is generated on a road network map that includes a plurality of map elements;

means for entering a user modification of the first route where the user modification
5 includes selection of at least one map element;

means for calculating a second route to the trip destination as a function of the user modification; and

means for transmitting the second route to a vehicle navigation system.

10 33. The navigation system of claim 32 where the selected map element is not included in the second route.

34. The navigation system of claim 32 where the selected map element is included in the second route.

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35. The navigation system of claim 32 where the user modification further includes a vehicle characteristic.

36. The navigation system of claim 35 where the vehicle characteristic may be selected
20 from a group of vehicle characteristics including a vehicle type, a cargo type, a vehicle size, a cargo size, a vehicle height, a cargo height, and a vehicle weight.

37. A navigation system comprising:

an input device connected with a navigation server the input device operable to allow
25 a user to enter a trip destination;

a route calculation module operable to calculate a first route to the trip destination;

a display for displaying the first route on a road network map that includes a plurality of map elements; and

an adaptive route calculation module operable to receive a user modification of the
30 first route from the input device, where the user modification includes selection of at least one map element in the road network map, where a second route is calculated by the adaptive route calculation module as a function of the user modification; where the adaptive route

calculation module is operable to determine differences between the first route and the second route, and where differences between the first route and the second route are transmitted to a vehicle navigation system.

- 5 38. A method of adaptively generating routes in navigation systems comprising:
- calculating a first route to a destination with a navigation server;
 - generating a road network map of the first route with the navigation server, where the road network map includes a plurality of map elements;
 - allowing a user to select a respective map element in the road network map;
 - 10 calculating an adapted route to the destination as a function of the selection of the map element in the road network map;
 - determining the differences between the first route and the adapted route;
 - transmitting the differences between the first route and the adapted route to a vehicle navigation system located in a vehicle;
 - 15 calculating the first route with the vehicle navigation system; and
 - applying the differences between the first route and the adapted route received from the navigation server to determine the adapted route in the vehicle navigation system.